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Memorandum

To: **LaDonna Turner, Site Assessment Manager**
Response and Prevention Branch
U.S. Environmental Protection Agency, Region 6

From: **Phyllis Bustamante, Acting Manager, Superfund Oversight Section, Ground Water Quality Bureau, New Mexico Environment Department.**

Date: **May 8, 2012**

Subject: **Pre-CERCLIS Screening Assessment of Mount Taylor Mine, New Mexico: No Further Action Under CERLCA Recommended**

Site Name	Mount Taylor	**Alias**	NA	**Street Address**	NA
City	NA	**State**	New Mexico	**Zip code**	NA
County	Cibola County				
Latitude	35° 20' 26.34" N	**Longitude**	107° 38' 02.60" W		

Site physical description:
The Mount (Mt.) Taylor mine has surface facilities covering 147 acres located in Section 24, T13N, R8W, in the Ambrosia Lake Mining Sub-District of the Grants Mining District in Cibola County and is within one mile northwest of the community of San Mateo (Figure 1). The inactive underground Mt. Taylor Mine is currently owned by Rio Grande Resources Corporation (RGRC) and includes an estimated 4,000 acres of surface and mineral estates. The present extent of the underground workings is estimated at 160 acres. The Mt. Taylor Mine is currently on "Standby Status" (a cessation of operations greater than 180 days) under an Existing Mine Permit/Closeout Plan (CI002RE) through the New Mexico Mining Act Rules [19.10.7.700 NMAC] (Ref. 1).

Site identification:
The Mt. Taylor Mine is one of 97 legacy uranium mine sites identified within the Ambrosia Lake Mining Sub-District of the Grants Mining District (Ref. 1). The Mt. Taylor Mine has surface facilities that include numerous buildings, a main shaft and hoist, one waste rock pile, one ore stockpile, and eight mine water treatment lagoons (Ref. 2).

Site summary:
Gulf Mineral Resources began development of the underground workings at the Mt. Taylor Mine in 1975. The uranium reserves at the Mt. Taylor Mine are within the Westwater Canyon Member of the Morrison Formation. The ore body is approximately 3,100 feet bgs. The main shaft was sunk to a depth of 3,300 feet below the ground surface (bgs). Production of uranium ore began in 1979. The Mine operated until 1983 when operations were suspended. Chevron Resources Company purchased the Mt. Taylor Mine in 1985 and produced uranium ore through 1990 when operations were suspended (Ref. 2). The Mt. Taylor Mine produced an estimated 8,000,000 pounds of uranium (UO_3) during its operation. Currently the Mt. Taylor Mine remains on "Standby Status."

Following passage of the New Mexico Mining Act in 1993, in 1995 RGRC applied for and received an Existing Mine Permit (CI002RE) from the New Mexico Energy Minerals and Natural Resources Department (NMEMNRD) for the Mt. Taylor Mine in accordance with the New Mexico Mining Act Rules [19.10.5.500 NMAC]. A Closeout Plan for surface reclamation of the Mt. Taylor Mine was approved in 1998. RGRC applied for and received "Standby Status" under the New Mexico Mining Act Rules [19.10.7.700 NMAC] in 1999, 2005 and 2010. By receiving "Standby Status", RGRC agrees to meet the requirements of applicable Federal and State environmental standards and regulations during the period of standby status at the Mt. Taylor Mine. RGRC has maintained all State and Federal environmental permits under which the Mt. Taylor Mine has operated. These permits are discussed below.

During the operation of the Mt. Taylor Mine, approximately 4,200 gallons per minute (gpm) of ground water was pumped from the mine workings and discharged to the surface (Ref. 5). In 1978, the New Mexico Environment Department (NMED) notified Gulf Minerals Resources that a Discharge Plan (DP) would be required for the Mt. Taylor Mine operations. In June 1979, NMED approved DP-61 for the surface retention of raw mine water, treatment and off-site surface discharge. A total of eight surface lagoons were constructed for the treatment of the raw mine water which was first treated with a flocculent to settle out particulates then treated with barium chloride to reduce radium concentrations. In 1979, an Ion Exchange (IX) plant was constructed to remove uranium from mine water, but it was only in use for several months during a pilot study (Ref. 6).

From 1975 to 1982, untreated wastewater from the Mine's showers, restrooms and equipment wash-down area was discharged to a sewage lagoon. The sewage lagoon was not regulated by DP-61 until 1982 when treated wastewater from the lagoon was comingled with treated mine water and discharged via pipeline to an arroyo in San Lucas Canyon four and one-half miles north of the Mine site (Ref. 7). The unlined sewage lagoon was one acre in size and received approximately 11.25 acre feet per year of untreated wastewater. A sewage treatment plant eliminated the need for the lagoon in 1982 and eventually the lagoon was covered by an 11.5 acre waste rock pile from the mine workings (Ref. 8)

In addition to DP-61 the RGRC maintains a National Pollutant Discharge Elimination System (NPDES) permit (NM0028100) with the Environmental Protection Agency (EPA) Region 6 for the discharge of treated mine water comingled with treated waste water from the Mt. Taylor Mine to a water of the United States (Ref. 9). The Mt. Taylor Mine stopped all mine water pumping and discharges shortly after mining operations were suspended in 1990 (Ref. 6). The RGRC also

maintains a NPDES multi-sector general permit for storm water discharges associated with the Mt. Taylor Mine site. The Mt. Taylor Mine maintains a series of storm water detention ponds to collect run-off from various sectors of the mine site such as the ore stockpile and the waste rock pile.

After the suspension of mining operations, DP-61 required continued ground water monitoring at the mine site. In 1995 monitoring data identified contamination in the shallow alluvial aquifer in the area of the sewage lagoon. Contaminants of concern in the saturated alluvium included chloride, nitrate, sulfate, total dissolved solids and uranium.

In 2005, the Mt. Taylor Mine submitted a Stage I abatement plan proposal to investigate the shallow alluvial aquifer contamination under the New Mexico Water Quality Control Commission Abatement Regulations [20.6.2.4000 NMAC]. The original investigation identified the sewage lagoon as the source of contamination in the shallow alluvial aquifer. NMED required further investigation to include the waste rock pile as a potential source (Ref. 10). In a letter dated March 2012 NMED agreed with the analysis and characterization of the waste rock pile and concurred that the sewage lagoon as the probable source of contamination of the shallow aquifer. NMED requested RGRC continue abatement activities under a Ste II abatement plan to remediate the shallow alluvial aquifer (Ref. 11).

Targets:
The community of San Mateo is within one mile of the Mt. Taylor Mine. The 2010 United States Census data reports a population of 161 people for the community of San Mateo (Ref 12). This community and surrounding area receives its drinking water through the San Mateo Mutual Domestic Water Consumers Association (MDWCA). This MDWCA provides drinking water to 192 customers. The MDWCA well is approximately 650 feet bgs in the Point Lookout Sandstone. Table 1 contains ground water radiological data from samples collected from the San Mateo MDWCA well in 2005 (Ref 13).

The Mt. Taylor Mine Stage 1 Abatement Plan identified 61 ground water wells in the vicinity of the community of San Mateo and west of the mine site approximately 4 miles. It is unknown how many wells in the vicinity of San Mateo are used for drinking water since the community has a water system. Outside of the community of San Mateo there are approximately ten additional residences within a four mile radius of the Mt. Taylor Mine (Ref 7). Two residential wells within 1.25 miles of the Mt. Taylor Mine were sampled for the 2008 San Mateo Creek Basin Site Inspection. Results of these samples can be found in Table 2 (Ref 14).

In 2009, EPA Region 6 Superfund Technical Assessment and Response Team began an assessment of residential structures that are possibly contaminated with radiation attributable to uranium mining and milling activities in the Grants Mining District. The Airborne Spectral Photometric Environmental Collection Technology (ASPECT) operated by EPA has developed an exposure rate contour map of the Ambrosia Lake Mining Sub-District that includes the Mt. Taylor Mine and the surrounding area including the community of San Mateo (Figure 2). The EPA ASPECT exposure rate measurements were performed in part to identify areas where surface exposure rates were higher than the surrounding environment. Based on the results of the ASPECT Mapper, EPA Region 6 began an on the ground residential radiological survey. EPA has been surveying structures and properties potentially affected in the community of San Mateo (Ref 15).

Site ownership and Potential Responsible Parties:
The Mt. Taylor Mine began operation in 1979. Gulf Minerals owned and operated the Mt. Taylor Mine from 1979 till 1985. Chevron Resources Company purchased the Mine in 1985 and operated it until 1990. In 1991, RGRC purchased the mine and is the current owner (Ref. 2).

File review:
Files that were reviewed for this assessment are listed below in the reference section.

Site reconnaissance:
NMED has not conducted a site reconnaissance for this Pre-CERCLIS Screen.

Recommendation:
NMED recommends that no further action is required at the Mt. Taylor Mine at this time. SOS may revisit this recommendation should additional information become available that indicates that an imminent threat to human health or the environment exists such that further action under CERCLA is warranted. NMED SOS also proposes to periodically review new data as it becomes available and incorporate it into the ground water conceptual model for the Grants Mining District. A generalized investigation of potential ground water impacts from former uranium mines within the Grants Mineral Belt is recommended as part of regional ground water quality characterization.

References:

1. New Mexico Energy Minerals and Natural Resources Department, 2007, Abandoned and inactive uranium mines in New Mexico database, Mining and Minerals Division.
2. Rio Grande Resources Company, Mount Taylor Mine Permit Application, Submitted to Mining and Minerals Division, Energy Minerals and Natural Resources Department, State of New Mexico, December 1994.
3. New Mexico Energy Minerals and Natural Resources Department, Mining and Minerals Division, Permit No CI002RE, Mount Taylor Mine, Existing Mining Operation, July, 1995.
4. New Mexico Environment Department, Environmental Compliance Determination, Closeout Plan CI002RE, Mt. Taylor Mine, December 1998.
5. Rio Grande Resources Company, Environmental Site Assessment, Mt. Taylor Uranium Mine Operation, June 1994.
6. New Mexico Environment Department, Discharge Plan-61, Mt. Taylor Mine, 2007
7. Rio Grande Resources Corporation, Proposed Voluntary Stage 1 Abatement Plan, Mt. Taylor Mine, Prepared by Metric Corporation, March 2005.
8. Rio Grande Resources Corporation, Mt. Taylor Mine Waste Rock Pile Characterization, Prepared by Klienfelder West Inc., March 2012.
9. USEPA, Authorization to Discharge under a National Pollutant Discharge Elimination System, NPDES Permit No. 0028100, Mt. Taylor Mine, July 2010.
10. New Mexico Environment Department, Approval of the Mt. Taylor Mine Waste Rock Characterization Report, Letter to RGRC from D. Mayerson, March 2012.
11. Rio Grande Resources Corporation, Interm final Site Investigation for the RGRC Mt. Taylor Mine, Prepared by Metric Corporation, December 2005.
12. United States Commerce Department, US Census, New Mexico State and County Quick Facts, Census Designated Places, 2010.

13. New Mexico Environment Department, Drinking Water Watch Database, Drinking Water Bureau, San Mateo MDWCA, 2012.
14. New Mexico Environment Department, Site Investigation San Mateo Creek Legacy Uranium Sites, CERCLIS ID NMN00060684, June 2010.
15. USEPA Region 6, Aerial Radiological Survey of the Grants and Cebolleta Land grant Areas in New Mexico, Airborne Spectral Photometric Environmental Collection Technology, January 2010.

Table 1. San Mateo MDWCA Well, Samples collected on November 31, 2005*

Analyte	EPA MCL	MRL[2]	Concentration
Gross Alpha (including Rn & U)	15 picocurries per Liter (pCi/L)	1.96 pCi/L	ND**
Gross Beta	4 millirem/yr[1]	1.80 pCi/L	1.90 pCi/L
Radium 226	5.0 pCi/L	1.36 pCi/L	0.17 pCi/L
Radium 228	5.0 pCi/L	0.81 pCi/L	ND**

* Data taken from NMED Drinking Water Watch database.
** Not Detected
[1] Equivalent to 3pCi/L
[2] Method Reporting Limit

Table 2. Residental Wells Sampled in 2008 within a 1.25 Mile Radius of the Mt. Talyor Mine

Analyte	EPA MCL	MRL	SMC-30*	SMC-31*
Gross Alpha	15 pCi/L	ND	ND	ND
Arsenic	10 micrograms per Liter (µg/L)	ND	ND	ND
Barium	2,000 µg/L	300 µg/L	300 µg/L	45.3 µg/L
Lead	15 µg/L	ND	ND	ND
Nitrate	10 milligrams per Liter (mg/L)	ND	ND	ND
Selenium	50 µg/L	ND	ND	ND
Uranium	30 µg/L	2.7 µg/L	2.7 µg/L	ND

* Residential Well ID Number

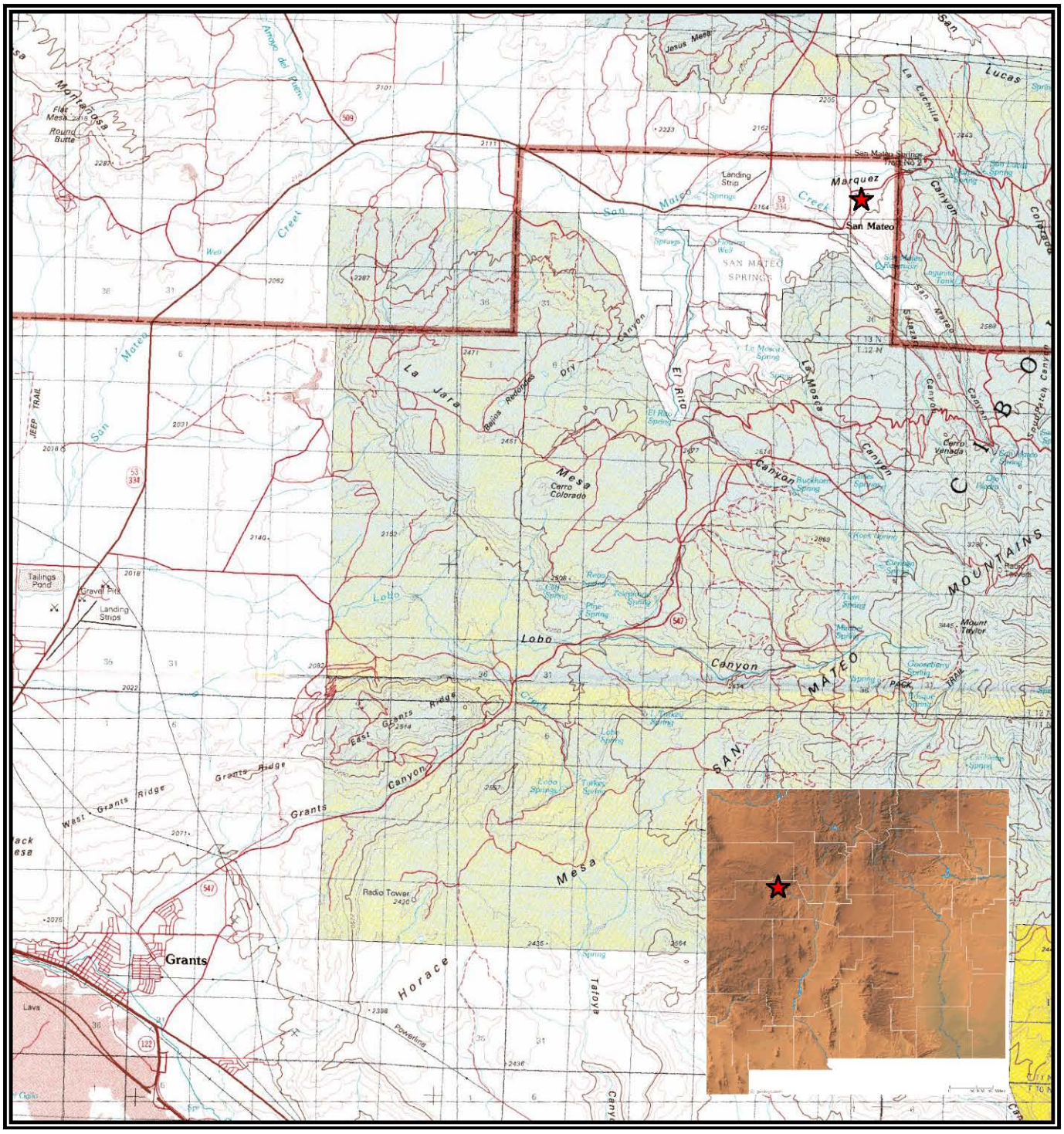

Figure 1, Mt. Taylor Mine Location

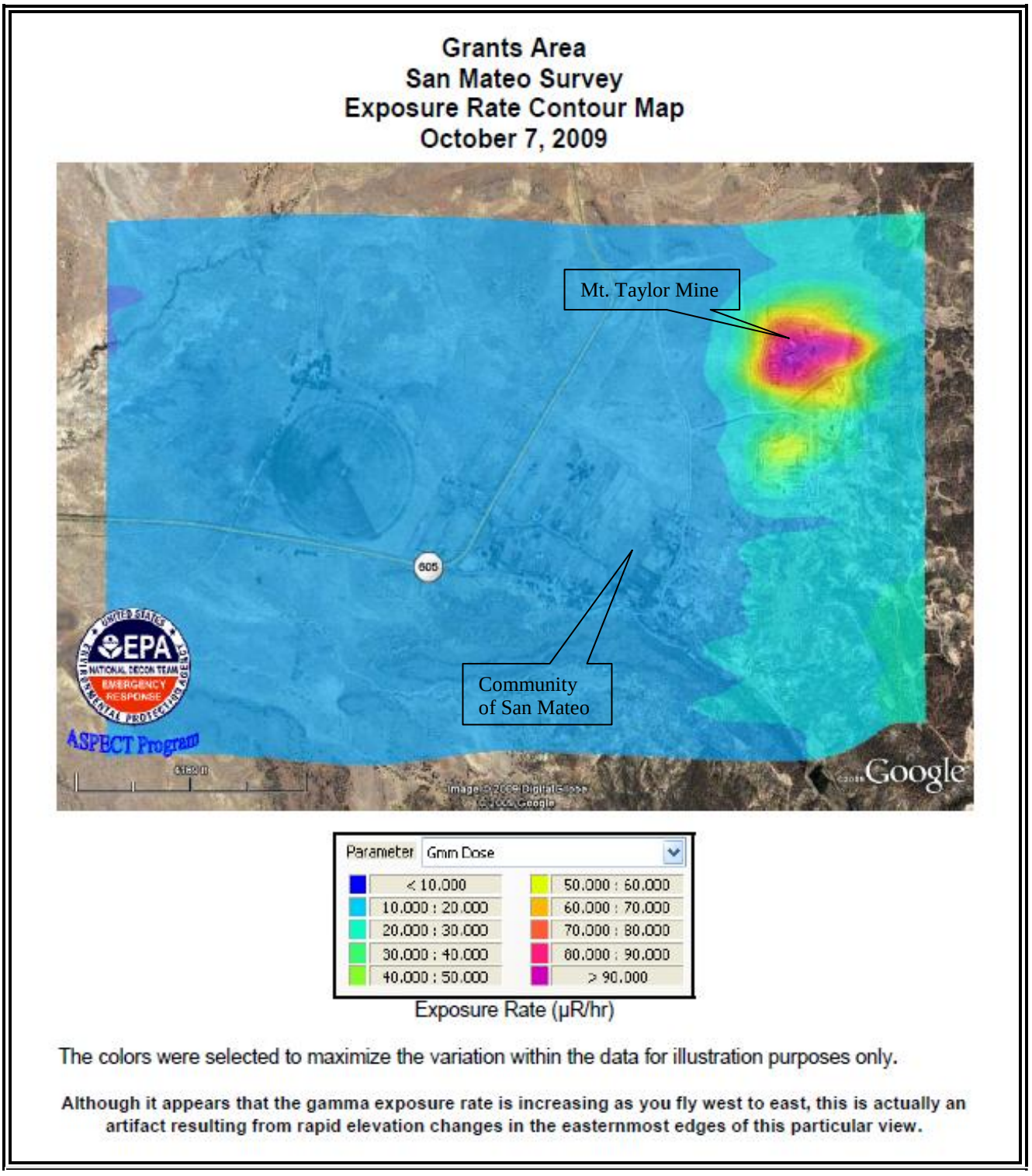

Figure 2. Radiological Exposure Rate Map of Mt. Taylor Mine and San Mateo